Thermoglaze

TG 50

Operator's Manual

and

Technical Supplement

Belshaw Bros., Inc.
814 44th Street NW, Suite 103
Auburn, WA 98001 USA
Tel: (206) 322-5474
Fax: (206) 322-5425
Toll Free (US): 1-800-578-2547
E-mail: service@belshaw.com
www.belshaw.com

Belshaw ADAMATIC Bakery Group

Thermoglaze

TG 50

Operator's Manual

Belshaw Bros., Inc.
814 44th Street NW, Suite 103
Auburn, WA 98001 USA
Phone: (206) 322-5474 • Fax: (206) 322-5425
Email: service@belshaw.com • http://www.belshaw.com

Congratulations on buying a new Thermoglaze from Belshaw Bros., Inc. Please inspect the unit carefully for damage or missing pieces immediately after receiving your system. Belshaw cannot pay for shipping damage, because the freight company has accepted the machine from Belshaw in good condition, and is responsible for its safe delivery.

For your protection, **each crate should be inspected before signing the Bill of Lading to report any visible damage caused by the trucker in transit, and account for the number of crates.**

EQUIPMENT RECORD

Please provide the information below when you correspond with us about your machine.

Purchased by _____

Installed by _____

Date of Installation _____

Model number _____

Serial number _____

020708

MN-1717EN

Belshaw Bros., Inc.

814 44th Street NW, Suite 103

Auburn, WA 98001 USA

Phone: (206) 322-5474 • Fax: (206) 322-5425

Email: service@belshaw.com • http://www.belshaw.com

Contents

1 Operation 1

2 Cleaning 3

Daily TG Cleaning Instructions 3

Preface

The operator of the Thermoglaze is expected to behave safely, read this manual before operation, and follow its instructions and warnings.

Study the instructions and warnings in this manual carefully before operating the equipment. A thorough understanding of how to install, maintain, and safely operate the Thermoglaze will prevent production delays and injuries. Prior operation of the equipment before reading and understanding the instructions in the manual will void the warranties of the equipment.

To use the Thermoglaze safely, heed the following warnings and all other warnings that appear in this manual:

- To avoid damaging the Thermoglaze, never use force to assemble, disassemble, operate, clean, or maintain it.

1 Operation

Figure 1.1 – Control Panel View

- Use main power switch to turn unit on and off. Green power on button will illuminate when power is on.

WARNING

E-STOP SHOULD BE RESERVED FOR EMERGENCIES ONLY

- Turn on oven power switch and heat for 30 minutes to allow it to reach operating temperature.
    - **Heat light will go out when oven reaches temperature.**
    - Conveyor will not move until oven is up to operating temperature.
- Load glaze reservoir with 40 pounds (one large bucket) of glaze and turn on the glaze pump.

WARNING

DO NOT OPERATE GLAZER WITHOUT GLAZE OR WATER IN THE PUMP. DOING SO CAN CAUSE PERMANENT DAMAGE TO THE PUMP

- After the donuts have been in the Thermolizer for at least 20 minutes (60 minutes for filled product), turn on glazer using the on switch located on the main control panel.
- After the donuts are thawed, place a screen of donuts from Thermolizer box to the infeed end of the Thermoglaze conveyor and allow the screen to travel through the oven and glazer. This takes approximately 1-1/2 to 3 minutes.
- When the screen of donuts is through the glazer and stopped forward travel, place the glazed product on a rack for cooling using the 2 delrin tray grips provided with the unit.

WARNING

TO AVOID BURNING YOURSELF, NEVER TOUCH THE THERMOGLAZE UNIT, CONVEYOR, OR INTERIOR OF THE OVEN WHILE THE MACHINE IS IN USE

WARNING

THOROUGHLY CLEAN AND DRY THE FLOOR IF WATER OR OTHER MATERIALS ARE SPILLED. MATERIALS SPILLED ON THE FLOOR MAY CAUSE SERIOUS INJURY AND LOSS OF LIFE

WARNING

CONVEYOR WILL AUTOMATICALLY START WHEN THERMOGLAZE REACHES OPERATING TEMPERATURE

CAUTION!

DONUT SCREENS ARE HOT AFTER COMING OUT OF THE GLAZER AND WILL BURN YOU IF YOU GRAB THEM WITHOUT THE HANDLES

CAUTION!

TO AVOID BURNING YOURSELF, NEVER TOUCH HOT INFEED OVEN END PANEL WHEN MACHINE IS IN OPERATION

CAUTION!

TO AVOID BURNING YOURSELF, NEVER TOUCH HOT SCREEN WHEN MACHINE IS IN OPERATION

WARNING

LIFTING THE GLAZE BUCKET MAY CAUSE SPRAINS OR BACK INJURY

WARNING

SERIOUS PERSONAL INJURY MAY FROM CONTACT WITH PINCH POINTS BETWEEN CHAIN, SPROCKETS AND PULLEY, CUTS OR LOSS OF LIMB MAY OCCUR WHEN CONTACTING THIS PINCH POINTS. NEVER OPERATE THE MACHINE WITH GUARDS AND COVERS REMOVED.

CAUTION!

TO AVOID BURNING YOURSELF, NEVER TOUCH HOT CONVEYOR CHAIN WHEN MACHINE IS IN OPERATION

CAUTION!

TO AVOID BURNING YOURSELF, NEVER TOUCH HOT OUTFEED OVEN END PANEL WHEN THERMOGLAZE IS IN OPERATION

CAUTION!

SERIOUS PERSONAL INJURIES LIKE SCRATCHES OR CUTS MAY RESULT FROM CONTACT WITH SHARP EDGES

CAUTION!

REACHING ACROSS, LEANING OVER THE MACHINE MAY RESULT IN BURN WHEN MACHINE IS IN OPERATION

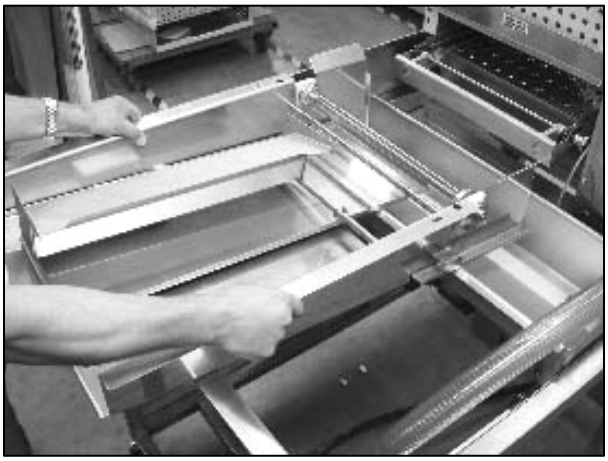
2 Cleaning

Daily TG Cleaning Instructions

Disassembly

1. Allow the Thermoglaze to completely cool. (All material must under 130º)
2. Pump the unused glaze back into a bucket.
3. **Lockout the TG at Circuit Breaker!**
4. Remove the glaze trough.

5. Remove the drive belt.

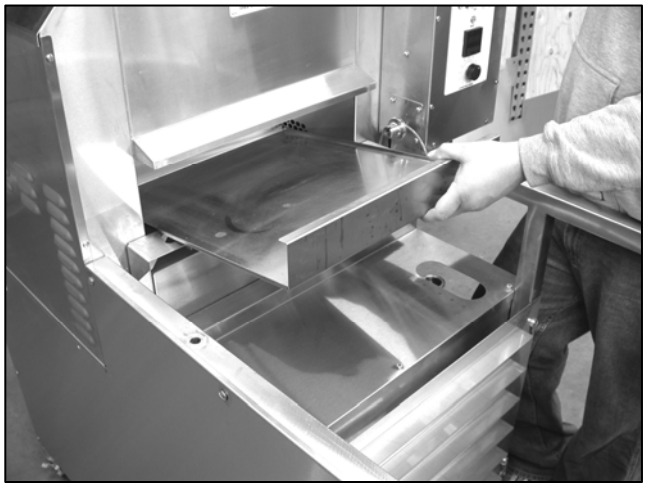


6. Remove the glazer drain tray.

7. Disconnect the conveyor drive coupling.

8. Remove the conveyor assembly through the outfeed end of the oven.

9. Lift out drip tray.

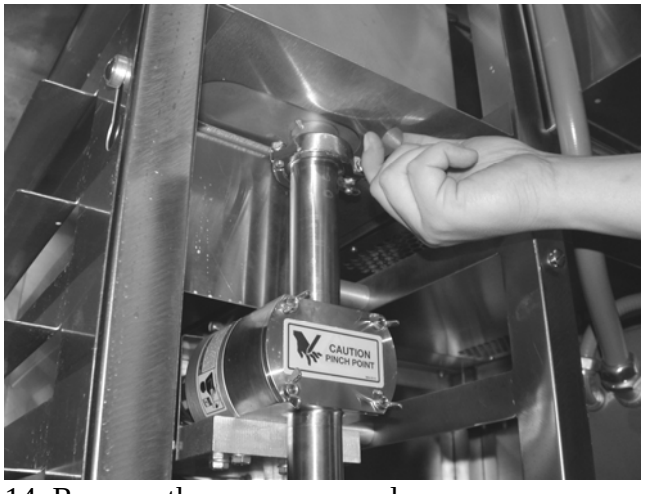


10. Remove the oven crumb tray.

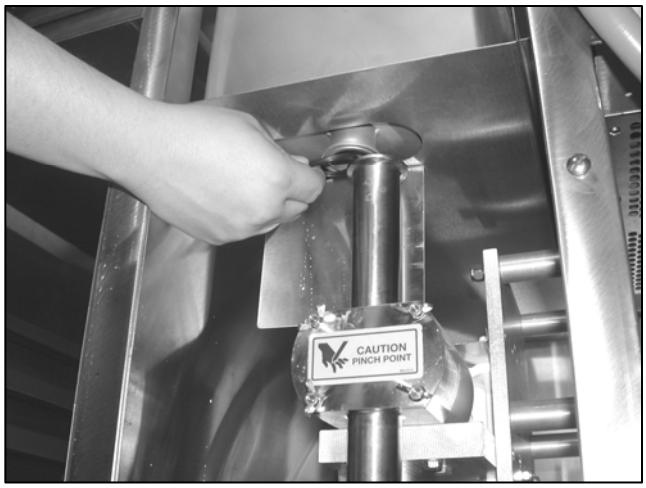
11. Open the safety cover.

12. Loosen the lower glaze hose clamp.

13. Remove the lower glaze hose clamp and gasket.



14. Remove the upper pump clamp.



15. Lift the glaze reservoir and remove the gasket

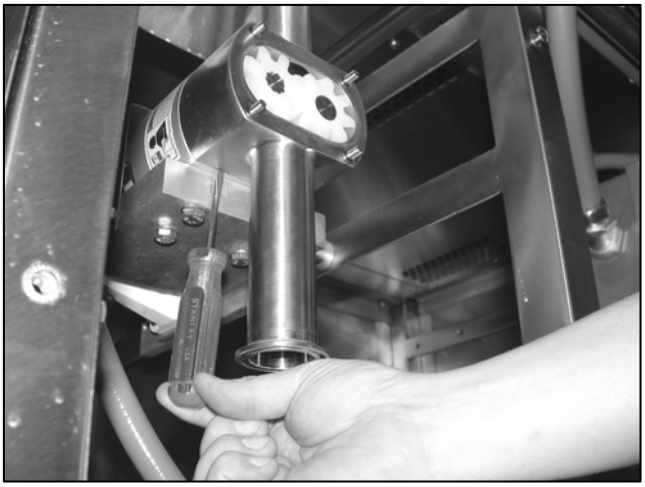
16. Remove the glaze reservoir and hose.

17. Remove the drip pan.

18. Unscrew and remove the 4 glaze pump cover wing nuts.

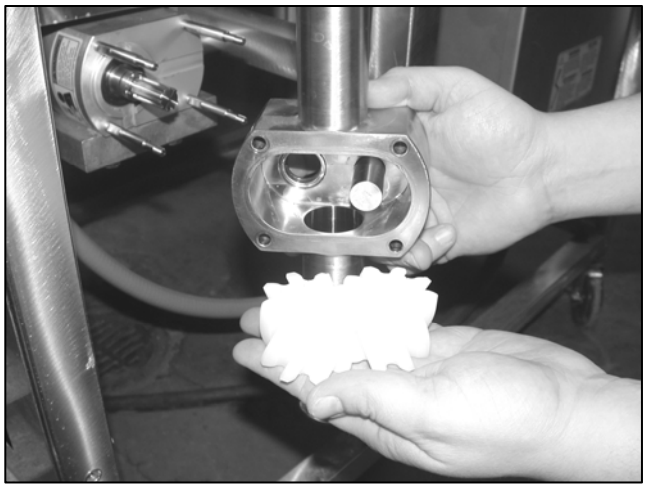
19. Remove the glaze pump cover and “O” ring.

20. Remove the glaze pump body.



21. Insert a flat tip screw driver into the slot to loosen the pump body if it can not be removed by hand.

22. Remove the pump body and impellers.

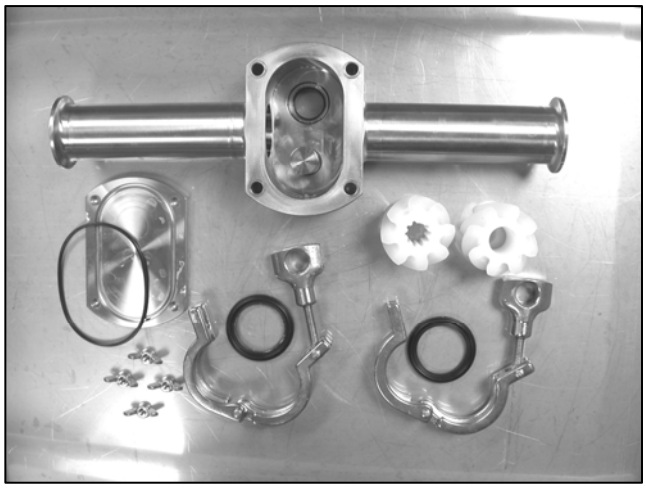


23. Remove the impellers from the pump body.

WARNING
SPILLED GLAZE ON FLOOR MAY CAUSE SLIPPING AND FALLING, RESULTING IN SPRAINS, BURNS, BROKEN BONES OR BACK INJURY.

Cleaning

1. Hand wash all parts of the oven and glazer with warm soapy water.
2. Do not use caustic cleaners on oven parts.
3. You may use an approved oven cleaner on the stainless steel finger cover only.
4. Do not use oven cleaner on any other part of the oven or glazer!
5. Do not hose/spray down any part of this machine.



6. Glaze pump body and parts.

CAUTION
FAILURE TO PROPERLY CLEAN OR LUBRICATE GLAZE PUMP MAY CAUSE DAMAGE TO THE PUMP GEAR IMPELLERS.

Assembly

NOTE
LUBRICATE THE PUMP BODY, SHAFT "O" RING, AND GEAR IMPELLERS WITH "KAY" FOOD GRADE LUBRICANT. SEE FOLLOWING PICTURE.

KAY
FOOD GRADE LUBRICANT
Lubricates and protects foodservice equipment
CAUTION: May cause eye irritation. See precaution and first aid on back.
KEEP OUT OF REACH OF CHILDREN
FOR INSTITUTIONAL USE ONLY
Lubrica y protege equipo que maneja alimentos
CUIDADO: Puede causar irritación de los ojos. Véanse la precaución y los primeros auxilios al reverso.
MANTENGASE FUERA DEL ALCANCE DE LOS NIÑOS
SOLO PARA USO INSTITUCIONAL
Lubrifie et protège les équipements alimentaires
AVIS : Peut irriter les yeux. Voir précaution et premiers soins au verso.
CONSERVER HORS DE LA PORTÉE DES ENFANTS
POUR USAGE INSTITUTIONNEL SEULEMENT
1 QT (946 ml)

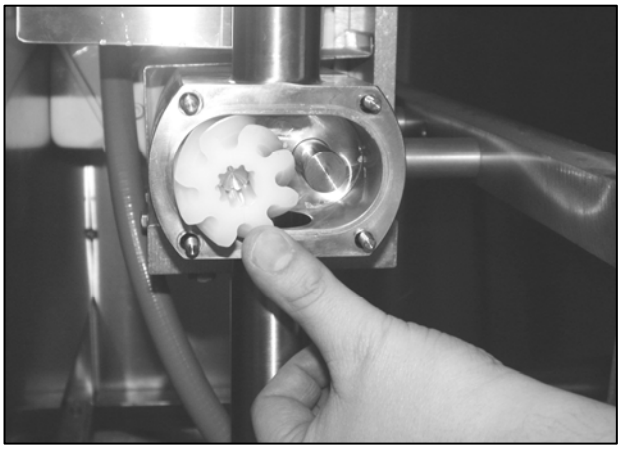
NOTE
PUMP COVER CAN BE REMOVED WITHOUT TOOLS

WARNING
GROWTH OF ORGANISMS IN GAPS CREVICESGLAZE PUMP, LINES AND FRAME CAN RESULT FROM IMPROPER CLEANING AND CAN CAUSE MILD TO SERIOUS ILL HEALTH

WARNING
DONUTS OR FILLING CATCH FIRE DUE TO IMPROPER CLEANING CAN CAUSE SERIOUS INJURY, BURNS OR DEATH

Assembly

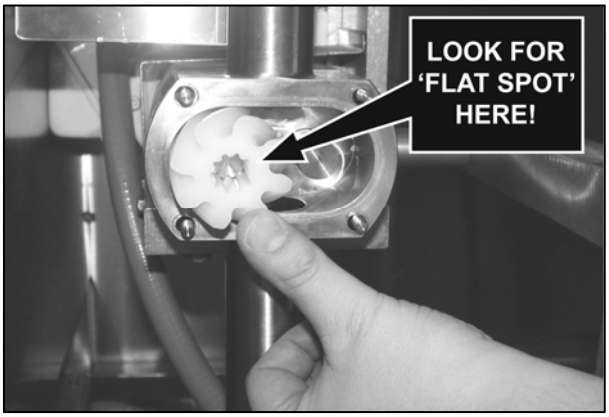
1. Install the glaze pump body.



2. Install the drive gear impeller. Line up the flat on the shaft with the flat in the impeller.

NOTE

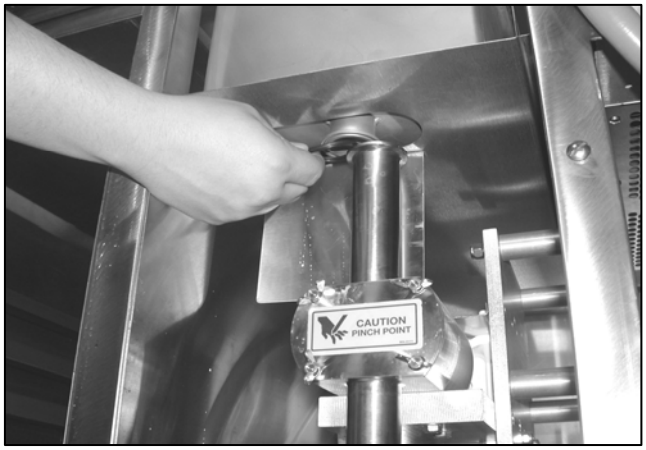
LUBRICATE THE PUMP BODY, SHAFT "O" RING AND GEAR IMPELLERS WITH FOOD GRADE MINERAL OIL.



3. Install the lay gear impeller.

4. Install the "O" ring into the glaze pump cover. Make sure it stays in place and you do not pinch it between the pump and cover. The "O" ring may need to be stretched before installing.

5. Install the 4 wing nuts finger tight.



6. Set the upper gasket on top of the glaze pump.

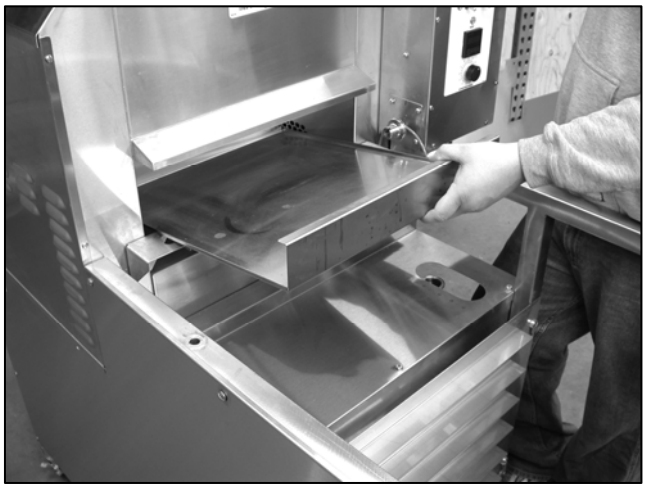
7. Install glaze reservoir.

8. Install the upper clamp.

9. Install the drip pan.

10. Close the safety cover. Make sure key is in safety switch

NOTE
THE GLAZE PUMP WILL NOT RUN WITH THE SAFETY COVER OPEN



11. Install the oven crumb tray.

12. Insert the conveyor through the outfeed end of the oven.

13. Make sure the locating pin is in the matching hole.

14. Pull the drive coupling back and line it up with the conveyor drive shaft.

15. Install the glaze drain tray.

16. Connect the drive belt.

CAUTION
CONVEYOR COUPLING MAY BE HOT

Thermoglaze

TG 50

Technical Supplement

Belshaw Bros., Inc.
814 44th Street NW, Suite 103
Auburn, WA 98001 USA
Phone: (206) 322-5474 • Fax: (206) 322-5425
Email: service@belshaw.com • http://www.belshaw.com

Congratulations on buying a new Thermoglaze from Belshaw Bros., Inc. Please inspect the unit carefully for damage or missing pieces immediately after receiving your system. Belshaw cannot pay for shipping damage, because the freight company has accepted the machine from Belshaw in good condition, and is responsible for its safe delivery.

For your protection, **each crate should be inspected before signing the Bill of Lading to report any visible damage caused by the trucker in transit, and account for the number of crates.**

EQUIPMENT RECORD

Please provide the information below when you correspond with us about your machine.

Purchased by _____

Installed by _____

Date of Installation _____

Model number _____

Serial number _____

020708

MN-1718EN

Belshaw Bros., Inc.

814 44th Street NW, Suite 103

Auburn, WA 98001 USA

Phone: (206) 322-5474 • Fax: (206) 322-5425

Email: service@belshaw.com • http://www.belshaw.com

Contents

1 Unloading and Uncrating 1

2 Installation 2

3 Assembly 3

4 Maintenance 6

5 Troubleshooting 7

SB-0345 Rev 1 12

SB-0315R3 18

6 Appendix 23

Preface

The operator of the Thermoglaze is expected to behave safely, read this manual before operation, and follow its instructions and warnings.

Study the instructions and warnings in this manual carefully before operating the equipment. A thorough understanding of how to install, maintain, and safely operate the Thermoglaze will prevent production delays and injuries. Prior operation of the equipment before reading and understanding the instructions in the manual will void the warranties of the equipment.

To use the Thermoglaze safely, heed the following warnings and all other warnings that appear in this manual:

- To avoid damaging the Thermoglaze, never use force to assemble, disassemble, operate, clean, or maintain it.

1 Unloading and Uncrating

DO NOT LIFT EXCESSIVE WEIGHT

Once the crate has been delivered, immediately take the covers off the crate and inspect for hidden damage. If damage is found, make a damage claim to the shipping company. After inspection, cut the banding and remove any other restrains from the Thermoglaze unit. Remove the banding and other packing material from the Thermolizer unit. Roll the Thermolizer, carefully, off the skid first and move it near the area where it will be assembled.

.

Do not connect the Thermoglaze or the Thermolizer to electrical power before completing the assembly and placement of the products.

Figure 1-1 shows the system in the crate ready to be unpacked. The cartons under the Thermoglaze contain the glaze trough. See Section 1 in Operator's Manual to assemble the unit. The carton in the Thermolizer contains the doors and other interior parts. See Thermolizer manual for assembly instructions.

The Thermoglaze system has been designed for quick assembly and installation. Within a short time of receiving the system, the installer can have the Thermoglaze ready to make donuts if the electrical connections are properly installed and inspected by the prevailing local authorities.

Figure 1-1 Packed Thermoglaze System

2 Installation

CAUTION

TO AVOID ELECTROCUTING YOURSELF OR DAMAGING THE THERMOGLAZE, NEVER ALLOW WATER, STEAM, CLEANING SOLUTION, OR OTHER LIQUID TO ENTER THE ELECTRICAL PANELS OR CONNECTIONS

Electrical:

Model	Dimensions	Power Requirements
TG50	88"L x 40W x 63"H	See data tag

Make sure that the power requirements of the Thermoglaze, shown on the data plate, match your power source.

Thermoglaze is provided with a 5-wire power cord that must be connected to circuit protective device in compliance with local, national and municipal electrical and building codes. See data plate voltage and current loads.

Do not apply electrical power to the system until the assembly has been completed. See Section 1 in Operator's Manual for the assembly of the Thermoglaze.

Venting:

Local codes prevail. The authorities having jurisdiction are stated in NFPA 96-1994 regarding requirements for the Thermoglaze.

Building Layouts:

Specification sheets and AutoCAD drawings for use in developing architectural drawings can be provided by request. Please call your Belshaw Bros., Inc. representative for help in defining your requirements

3 Assembly

Clean all parts with mild soap and water and let dry before assembly and applying electrical power to the equipment.

The Thermoglaze unit is design for ease of assembly and use. The system is crated in a manner so there are few pieces to put together once the Thermoglaze is in place for production.

After unpacking the system per the uncrating instructions, 1 item needs to be placed on the Thermoglaze to finish assembly: the glaze trough. The Glaze trough slips into the 2 holes on either side of the drain tray with the waterfall headed toward the oven. See figure 3-1 and 3-4 for help setting the trough in place. After the trough is in place attach the glaze hose to the trough by pushing it in the hose mount in the center of the trough.

To help familiarize you with your Thermoglaze, please study the following photographs:

Figure 3-1 Thermoglaze front view

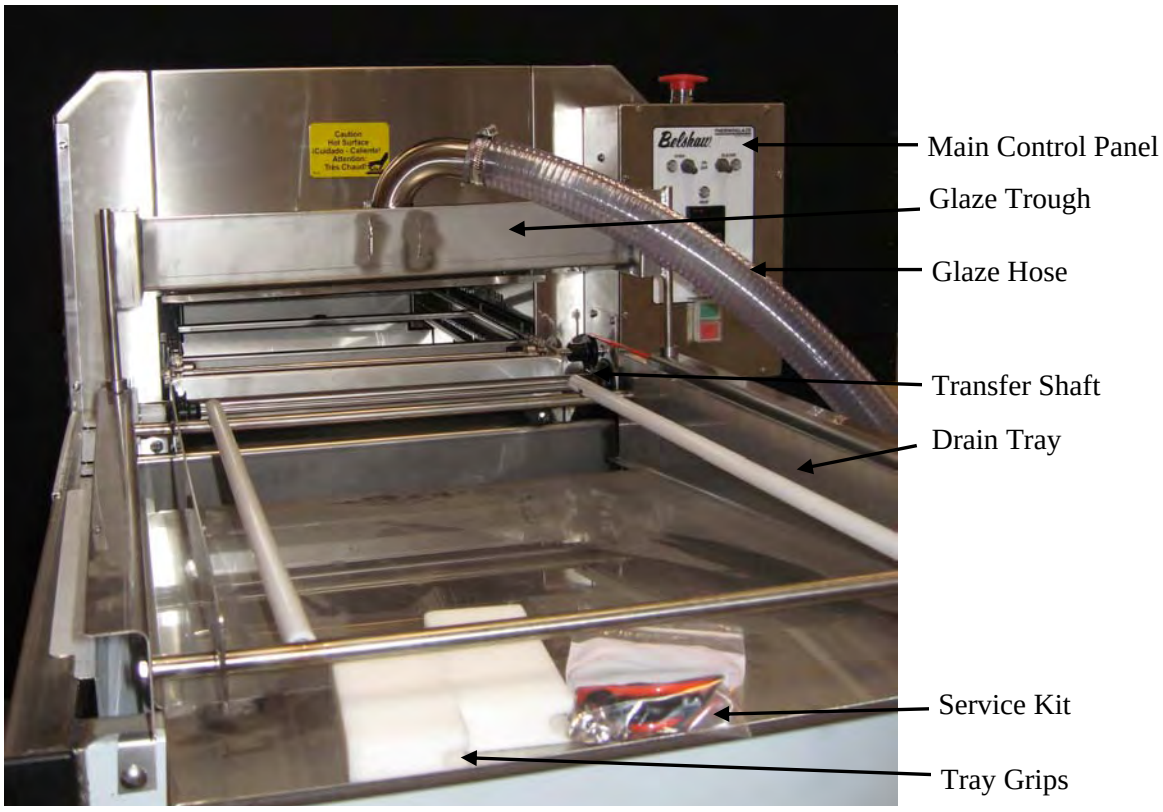


Figure 3-2 Right Hand View

Figure 3-3 Control Panel View

WARNING
TURN OFF POWER SOURCE TO THE MACHINE BEFORE REMOVING ANY ACCESS COVER OR GUARDS

The Thermoglaze system consists of a Thermoglaze unit and the Thermolizer. They are placed in unison in the area located for the production of donuts. See Figure 3-4 for Thermoglaze system.

Figure 3-4 Thermoglaze System.

WARNING
DO NOT CONNECT THE THERMOGLAZE TO ELECTRICAL POWER BEFORE COMPLETING THE ASSEMBLY PLACEMENT OF PRODUCTS

4 Maintenance

The ThermoGlaze is engineered to need little maintenance. By keeping the system clean, the equipment will last for years. The only maintenance that is required is the following:

When cleaning the donut system, check all rubber gaskets for wear and replace when necessary. Check for wear on impellers of the glaze pump, replace when necessary. .

DO NOT spray machine with water or cleaning agents to clean. Only wipe main unit off with damp cloth.

WARNING

HAZARDOUS VOLTAGE CONTACT WITH ELECTRICITY IN CONTROL BOX CAN CAUSE SHOCKS, BURNS OR DEATH. ALWAYS DISCONNECT THE CONTROL BOX FROM POWER SOURCE BEFORE MAINTENANCE

WARNING

CONTACT WITH ELECTRICITY IN MAIN CABLE CAN CAUSE SHOCKS, BURNS OR DEATH ALWAYS DISCONNECT MAIN ELECTRICAL CABLE THE POWER SOURCE BEFORE MAINTENANCE

WARNING

ELECTRICAL FIRES CAN CAUSE SERIOUS SHOCK, INJURY, BURNS OR DEATH. ALWAYS DISCONNECT MACHINE FROM POWER SOURCE BEFORE MAINTENANCE

5 Troubleshooting

Call Belshaw Bros. at (206)322-5474, or (800) 578-2547. One of our customer support representatives will be happy to help you. When you call, please specify the following:

- The model name of the machine.
- The serial number of the machine.
- The voltage, phase, and hertz (cycle) of the machine. This information can be found on the small, rectangular data tag/plate.

CAUTION

IF YOU PERFORM REPAIRS YOURSELF OR HAVE THEM PERFORMED BY ANYONE OTHER THAN BELSHAW BROS. OR A SERVICE TECHNICIAN AUTHORIZED BY BELSHAW BROS., YOU DO SO AT YOUR OWN RISK.

Following is a troubleshooting chart to help you identify and solve some basic problems.

WARNING

DISCONNECT THE MACHINE FROM THE POWER SOURCE BEFORE DISASSEMBLING, REPAIRING, OR WIRING.

WARNING

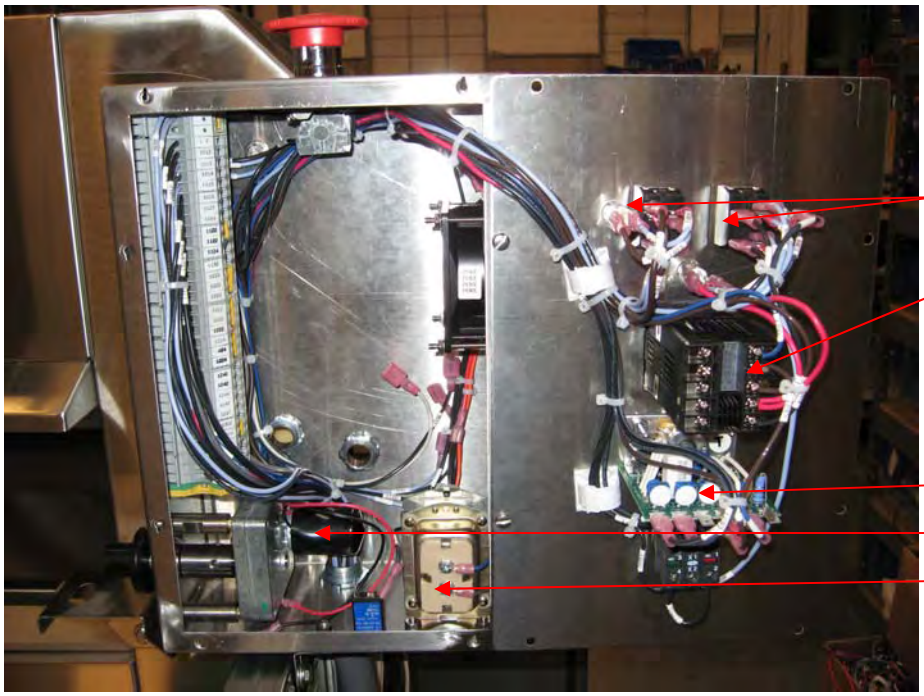
TO AVOID SERIOUS INJURY ALWAYS DISCONNECT THE THERMOGLAZE FROM THE POWER SOURCE BEFORE TROUBLESHOOTING

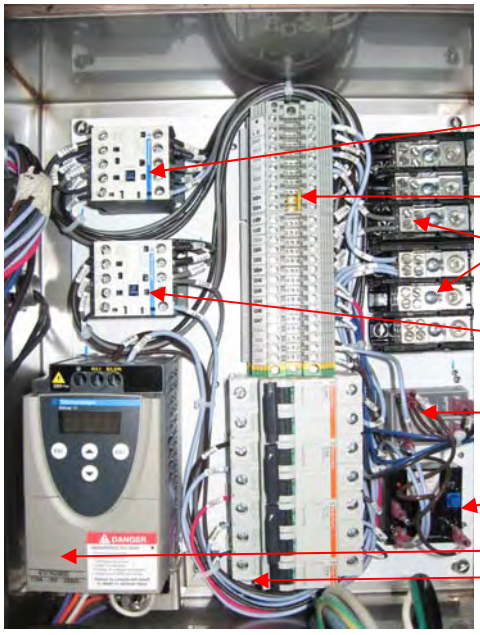
CONVEYOR WILL NOT MOVE	
Possible Causes	**What To Do**
Oven not to correct temperature yet.	Wait until the oven comes to temp.and the ready light comes on.
Conveyor is jammed.	Check for obstruction in conveyor and remove.
Motor circuit breaker is tripped.	Push the black circuit breaker reset at bottom of oven control panel.
GLAZER WILL NOT PUMP GLAZE	
Glazer motor is not running.	Check to make sure the motor is running. (See Pump Motor Will Not Run)
Glazer pump impellers are worn.	1. Disconnect power. 2. Replace impellers.
The rear panel safety key is not inserted in the safety switch.	Make sure the rear panel safety key is inserted into the safety switch.
GLAZE IS MISSING THE DONUTS ON ONE SIDE OF THE GLAZE SCREEN	
Glazer or glaze trough is not level.	Adjust level of glaze trough by moving set collar.
Glaze pump is running too slow.	1. Disconnect from power. 2. Open Electrical Enclosure. 3. Turn glazer speed control clockwise. 4. Close Electrical Enclosure.

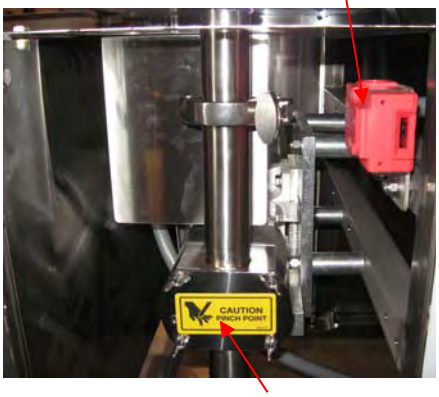
THE PUMP MOTOR WILL NOT RUN	
Possible Causes	**What To Do**
The connection of the power cord to the power source is faulty.	Make sure the power cord is properly connected into a proper power source.
The circuit breaker has been tripped.	1. Disconnect from power. 2. Open electrical enclosure. 3. Reset circuit breaker. 4. Close electrical enclosure.
The rear panel is not installed properly	1. Reinstall the rear panel. 2. Make sure that the key attached to the rear panel is inserted into the safety interlock switch.
	NOTE
	The glaze pump will not run with the rear panel removed.
THE FILL HOSE IS LEAKING	
Possible Causes	**What To Do**
Fill hose is leaking at the connection.	Hose bracket needs adjusting or tightening.
Fill hose is leaking near the pump.	Check for missing or damaged o-ring.

Calibration Procedure for Temperature and Cook Time on the Thermoglaze Model TG50

Turn off power to the TG50 before removing any access covers. This procedure should be performed only by qualified service technicians. Remove the electrical box cover on the oven to access the temperature and speed control adjustment potentiometers. The following is a photo of the location of the adjustment potentiometers for the temperature and cooking time for the Belshaw TG50 Thermoglaze.







Speed control/cook time adjustment:

Turn on the oven and allow it to heat for 30 minutes.

Put a glaze screen on the conveyor chains that run through the oven. With the oven in operation, time the leading edge of the screen as it enters the oven until the leading edge just leaves the exit end of the oven. Adjust the potentiometer until the desired time/speed is found. To increase the cook time, turn the potentiometer clockwise. To decrease the cook time, turn the potentiometer counterclockwise. The factory setting for cook time for the TG50 is 1 ½ minutes.

Temperature Adjustment:

Measure the temperature from the lower baffle on the exit end of the oven. Place a thermocouple in the hole located on the baffle, 3rd row from the outside, 3rd hole from the back side of the oven. **Note: The back side of the oven has a fan motor extended from it. Adjust the temperature by rotating the potentiometer located to the right of the speed control, clockwise increases the temperature, and counterclockwise decreases the temperature. The factory setting is 400º F.**

NOTE
PUMP COVER CAN BE REMOVED WITHOUT TOOLS.

SB-0345 Rev 1

AFFECTS: TG-50
PURPOSE: PROGRAMMING THE OGDEN ETR-9000 TEMPERATURE CONTROLLER

Operator Interface:

The operator interface on the Ogden ETR-9000, Temperature Controller, consists of the following:

- A scroll key [⟲] used to select a parameter to be viewed or adjusted.
- Up [▲] and down [▼] arrow keys are used to increase or decrease the selected parameter.
- A reset key [R] used to return to normal operation mode.

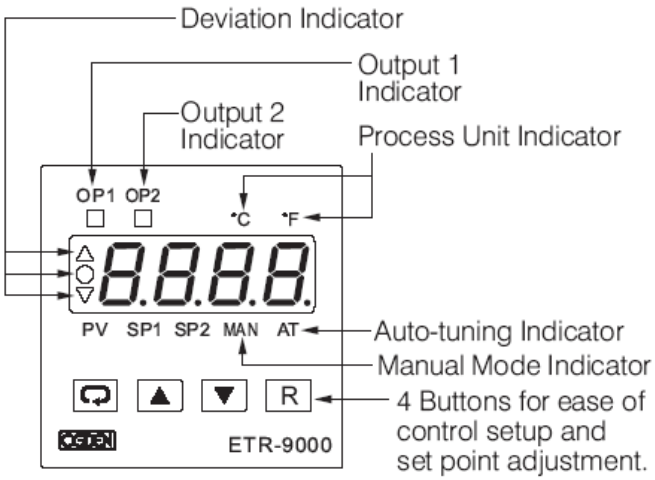


Figure 1.2 – Operator Interface Description

Menu Overview:

There are three main menus that contain parameters that require programming; they are User Menu, Setup Menu, and Calibration Mode. The figure below (Figure 2) shows the sequence of operations necessary to access the programming parameters in each menu.

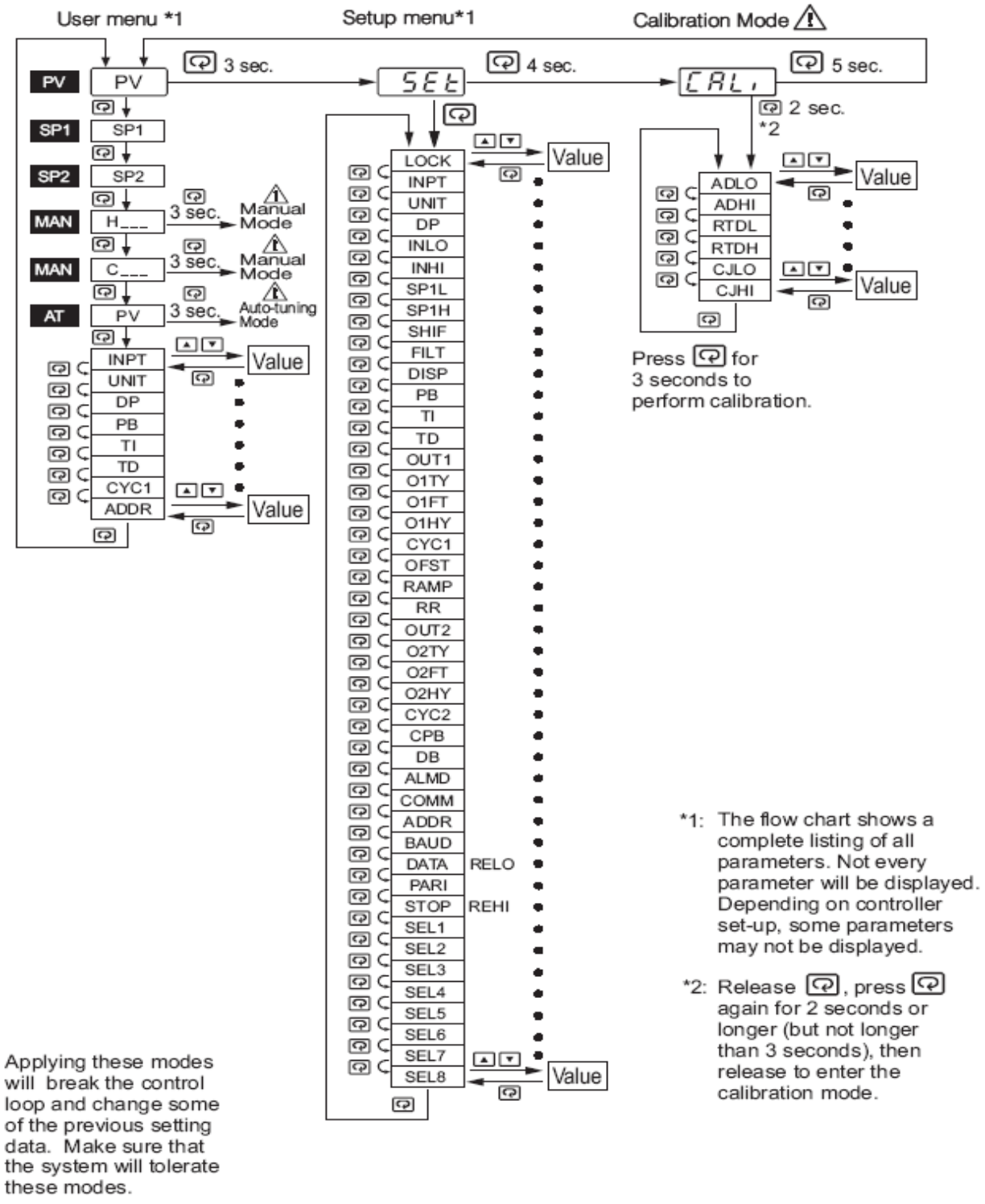


Figure 1.3 - Menu Flow Chart

TG-50 Parameter Settings

Tables 1, 2 and 3 below list of the temperature controller default settings and the Belshaw Factory settings. When installing a new controller 3 of the default setting must be changed to the Belshaw Factory settings.

- Push and hold the scroll key [⟲] for 3 seconds, this will take you to the "**SEt**" menu.
- Push the scroll key [⟲] once to access the "**LocK**" parameter.
- Push the Up [▲] or down [▼] arrow keys to change "**LocK**" to "**nonE**".
- Push the scroll key [⟲] to page through the settings and the Up [▲] or down [▼] arrow keys to change the settings listed in the Belshaw "**Factory**" column. (see tables 1, 2 and 3)

When finished setting parameters.

- Continue pushing the scroll key [⟲] until you are back to "**LocK**".
- Push the Up [▲] or down [▼] arrow keys to set "**LocK**" to "**uSEr**".
- Push the reset key [R] to return normal operation.

Default Settings:

In the event that parameters have been modified without recording the modifications, change each parameter to match those listed in Tables 1, 2 and 3 listed below (controller parameter default settings). Then adjust **SP1H, PB, OUT2** and the **LocK** parameters as listed in Belshaw "**Factory**" below. Then set **SP1** to 420ºF.

Table 1 - Parameter Descriptions

Parameter Notation	Parameter Description	Range	Default Value	Factory
SP1	Set point for output 1	Low: SP1L High :SP1H	77.0 °F (25.0 °C)	**420ºF**
SP2	Set point for output 2 when output 2 performs alarm function or dwell timer	Low: -19999 High :45536	18.0°F (10.0 °C)	
LOCK	Select parameters to be locked	0 nonE : No parameters are locked 1 SEt : Setup data is locked 2 uSEr : Setup and User data is locked Set point is un- locked 3 ALL : All data is locked	0	**set to "uSEr" after setup**
INPT	Input sensor selection	0 J_tC : J type T/C 1 K_tC : K type T/C 2 t_tC : T type T/C 3 E_tC : E type T/C 4 b_tC : B type T/C 5 r_tC : R type T/C 6 S-tC : S type T/C 7 n_tC : N typeT/C 8 L-tC : L type T/C 9 Ptdn : PT 100 ohms DIN 10 PtJS : PT 100 ohms JIS 11 4-20 : 4 - 20 mA 12 0-20 : 0 - 20 mA 13 0-60 : 0 - 60 mV 14 0- 1V : 0 - 1V 15 0-5V : 0 - 5V 16 1-5V : 1 - 5V 17 0- 10 : 0 - 10V	1 (0)	
UNIT	Input unit selection	0 °C : Degree C unit 1 °F : Degree F unit 2 Pu : Process unit	0 (1)	
DP	Decimal point selection	0 nodP : No decimal point 1 1-dP : 1 decimal digit 2 2-dP : 2 decimal digits 3 3-dP : 3 decimal digits	1	
INLO	Input low scale value	Low: -19999 High: 45486	0°F (-17.8 °C)	
INHI	Input high scale value	Low: INLO+50 High: 45536	200.0°F (93.3 °C)	
SP1L	Low limit of set point value	Low: -19999 High: 45536	0°F (-17.8 °C)	
SP1H	High limit of set point value	Low: SP1L High: 45536	1000°F (537.8 °C)	**450ºF**
SHIF	PV shift (offset) value	Low: -360.0 °F (-200.0 °C) High: 360.0 °F (200.0 °C)	0.0	**-40ºF**
FILT	Filter damping time constant of PV (seconds)	0 0 : 0 1 0.2 : 0.2 2 0.5 : 0.5 3 1 : 1 4 2 : 2 5 5 : 5 6 10 : 10 7 20 : 20 8 30 : 30 9 60 : 60	2	
DISP	Normal display selection	0 PV : Display process value 1 SP 1 : Display set point 1 value	0	**0ºF**
PB	Proportional band value	Low: 0 High: 932.0 °F (500.0 °C)	18.0 °F (10.0 °C)	**0ºF**
TI	Integral time value	Low: 0 High: 1000 sec	100	
TD	Derivative time value	Low: 0 High: 360.0 sec	25.0	

Table 2 - Parameter Descriptions

Parameter Notation	Parameter Description	Range	Default Value	Set to
OUT1	Output 1 function	0 rEVr : Reverse (heating) control 1 dir rt : Direct (cooling) control	0	
O1TY	Output 1 signal type	0 rELY : Relay 1 SSrd : Solid state relay drive 2 SSr : Solid state relay 3 4-20 : 4-20 mA 4 0-20 : 0 - 20 mA 5 0-1V : 0 - 1V 6 0-5V : 0 - 5V 7 1-5V : 1 - 5V 8 0-10 : 0 - 10V	0	
O1FT	Output 1 failure transfer mode	Select BPLS (bumpless transfer) or 0.0 ~ 100.0 % to continue output 1 control function as the unit fails, or select OFF (0) or ON (1) for ON-OFF control.	0	
O1HY	Output 1 ON-OFF control hysteresis	Low: 0.1 High: 50.0 °C(90.0°F)	0.2 °F (0.1 °C)	
CYC1	Output 1 cycle time	Low: 0.1 High: 90.0 sec.	18.0	
OFST	Offset value for P control	Low: 0 High: 100.0 %	25.0	
RAMP	Ramp function selection	0 nonE : No Function 1 ñi nr : Use unit/minute 2 Hr.r : Use unit/hour	0	
RR	Ramp rate	Low: 0 High: 900.0 °F (500.0 °C)	0.0	
OUT2	Output 2 function	0 nonE : Output 2 No Function 1 ti ñr : Dwell timer action 2 dEHi : Deviation High Alarm 3 dELo : Deviation Low Alarm 4 dbHi : Deviation out of band Alarm 5 dbLo : Deviation in band Alarm 6 PVHi : Process High Alarm 7 PVLo : Process Low Alarm 8 CooL : Cooling PID Function	2	**"nonE"**
O2TY	Output 2 signal type	0 rELY : Relay output 1 SSrd : Solid state relay drive 2 SSr : Solid state relay 3 4-20 : 4 - 20 mA 4 0-20 : 0 - 20 mA 5 0-1V : 0 - 1V 6 0-5V : 0 - 5V 7 1-5V : 1 - 5V 8 0-10 : 0 - 10V	0	
O2FT	Output 2 failure transfer mode	Select BPLS (bumpless transfer) or 0.0 ~ 100.0 % to continue output 2 control function as the unit fails, or select ON (0) or OFF (1) for alarm and dwell timer function.	0	
O2HY	Output 2 hysteresis value when output 2 performs alarm function	Low: 0.1 High: 90.0 °F (50.0 °C)	0.2 °F (0.1 °C)	
CYC2	Output 2 cycle time	Low: 0.1 High: 90.0 sec.	18.0	
CPB	Cooling proportional band value	Low: 50 High: 300 %	100	
DB	Heating-cooling dead band (negative value= overlap)	Low: -36.0 High: 36.0 %	0	
ALMD	Alarm operation mode	0 norñ : Normal alarm action 1 LtCh : Latching alarm action 2 HoLd : Hold alarm action 3 LtHo : Latching & Hold action	0	

Table 3 - Parameter Descriptions

Parameter Notation	Parameter Description	Range	Default Value	Set to
COMM	Communication function	0 nonE : No communication 1 rtu : Modbus RTU mode protocol 2 4-20 :4-20mA retransmission output 3 0-20 :0-20mA retransmission output 4 0-5V :0-5V retransmission output 5 1-5V :1-5V retransmission output 6 0- 10 :0-10V retransmission output	1	
ADDR	Address assignment of digital communication	Low: 1 High: 255	———	
BAUD	Baud rate of digital communication	0 24 : 2.4 Kbits/s 1 48 : 4.8 Kbits/s 2 96 : 9.6 Kbits/s 3 144 : 14.4 Kbits/s 4 192 : 19.2 Kbits/s 5 288 : 28.8 Kbits/s 6 384 : 38.4 Kbits/s	2	
DATA	Data bit count of digital communication	0 7b, t : 7 data bits 1 8b, t : 8 data bits	1	
PARI	Parity bit of digital communication	0 EvEn : Even parity 1 odd : Odd parity 2 nonE : No parity bit	0	
STOP	Stop bit count of digital communication	0 1b, t : One stop bit 1 2b, t : Two stop bits	0	
RELO	Retransmission low scale value	Low: -19999 High: 45536	32.0 °F (0.0 °C)	
REHI	Retransmission high scale value	Low: -19999 High: 45536	212.0 °F (100.0 °C)	
SEL1	Select 1'st parameter for user menu	0 nonE : No parameter selected 1 LocU : LOCK is put ahead 2 inPt : INPT is put ahead 3 uni t : UNIT is put ahead 4 dP : DP is put ahead 5 SHi F : SHIF is put ahead 6 Pb : PB is put ahead 7 ti : TI is put ahead 8 td : TD is put ahead 9 o1HY : O1HY is put ahead 10 CYC1 : CYC1 is put ahead 11 oFSt : OFST is put ahead 12 rr : RR is put ahead 13 o2HY : O2HY is put ahead 14 CYC2 : CYC2 is put ahead 15 CPb : CPB is put ahead 16 db : DB is put ahead 17 Addr : ADDR is put ahead	2	
SEL2	Select 2'nd parameter for user menu	Same as SEL1	3	
SEL3	Select 3'rd parameter for user menu	Same as SEL1	4	
SEL4	Select 4'th parameter for user menu	Same as SEL1	6	
SEL5	Select 5'th parameter for user menu	Same as SEL1	7	
SEL6	Select 6'th parameter for user menu	Same as SEL1	8	
SEL7	Select 7'th parameter for user menu	Same as SEL1	10	
SEL8	Select 8'th parameter for user menu	Same as SEL1	17	

SB-0315R3

AFFECTS: TG-50, TG-25 **REVISED: 5/10/2006 JD**

PURPOSE: VFD-0017-3 PROGRAMMING INSTRUCTIONS

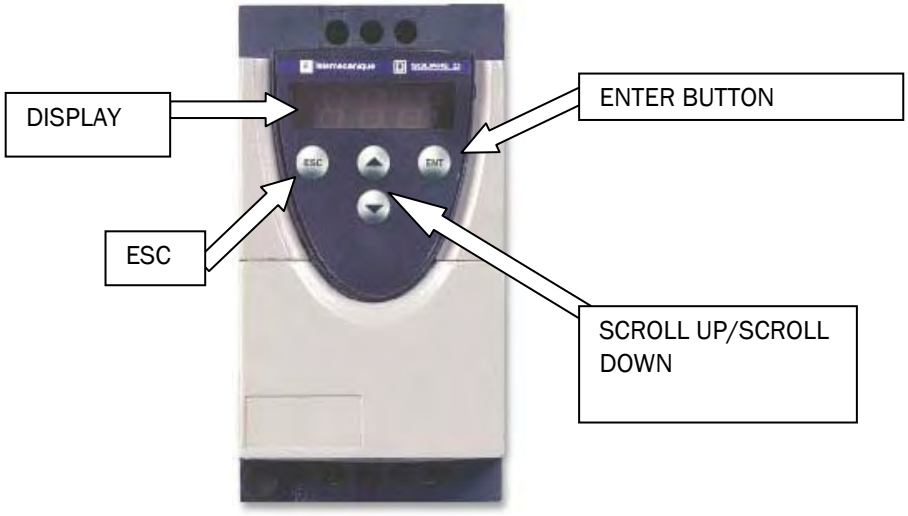


Figure 1

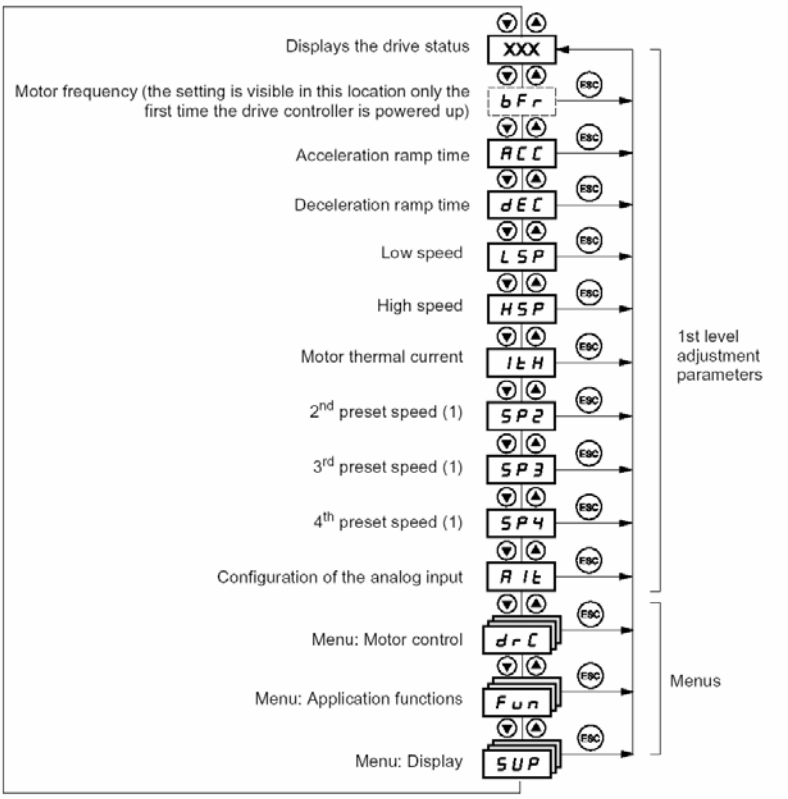


Figure 2

General:

Figure 1, above, shows the location of programming/navigating buttons on the face of the Altivar 11 (Belshaw P/N: VFD-0017). Figure 2 shows the navigation paths to various programming parameters. The following has been adapted from the ATV11 Technical Manual which can be found at http://ecatalog.squared.com/pubs/Motor%20Control/AC%20Drives/Altivar%2011/VVDED302026US.pdf

Programming:

Using Figures 1, and 2 navigate to the following programming parameters and set them as shown below in Table 1. Items listed as default are set at the factory and should be verified.

	The parameters in unshaded boxes can only be modified when the controller is stopped. Remove jumper wire from terminal 15 to stop drive.
	The parameters in shaded boxes can be modified with the controller operating or stopped.

MENU	PARAMETER	SECONDARY PARAMETER	FUNCTION	SETTING
1st Level	ACC		Acceleration ramp time (sec.)	3 (default)
	dEC		Deceleration ramp time (sec.)	3 (default)
	LSP		Low Speed (hz)	0 (default)
	HSP		High Speed (hz)	50/60 (default) based on motor Hz
	ItH		Motor thermal current (amps)	2.1 (Set to motor nameplate amps)
	Alt		Configuration of Analog Input	5U (default)
drC	UnS		Motor voltage (volts)	230 (Set to motor nameplate voltage)
	FrS		Motor frequency (hz)	60 (Set to motor nameplate frequency)
	nCr		Motor current (amps)	2.1 (Set to motor nameplate current)
	COS		Motor power factor	.80 (Set to motor nameplate power factor (sometimes labeled 'pf'))
FUn	tCC	ACt	2-wire control	2c (default)
		tCt	Type of 2-wire control	LEL
	rrS		Reverse operation	nO
	PS2	L1A	Assignment of L1A	nO
		L1b	Assignment of L1B	nO
	PI	PIF	Assignment of PI function feedback	nO (default)
	rSF		Fault reset	nO (default)
	bFr		Motor Frequency (hz)	60 for domestic machines (default). 50 for AS/NZ, and CE machines;

Returning VFD to factory default settings:

Sometimes the easiest way to ensure that the VFD has the correct operating parameters is to return the configuration parameters to factory default and re-enter the few parameters changed for use with the TG-25 and the TG-50s. There are currently over 50 adjustable parameters available with this VFD of which 11 need to be changed from factory default

To reset the VFD to operate on the TGs, reset the parameters to the factory default as shown below and re-enter and/or verify the parameters in the programming section above.

MENU	PARAMETER	SECONDARY PARAMETER	FUNCTION	SETTING
FUn	FCS		Reset configuration to factory default	Lnl (Must hold ENT key for 2 sec) ONLY USE THIS PARAMETER TO RETURN VFD TO FACTOR DEFAULT CONFIGURATION. IF

Note The drive must be stopped to modify this parameter. Remove jumper wire from terminal 15 to stop drive

FAULTS – CAUSES – REMEDIES

Clearing the fault:

Cut the power supply to the drive in the event of a non-resettable fault.

Wait for the display to go off completely.

Find the cause of the fault in order to correct it.

Restore the power supply – this clears the fault if it has disappeared.

Drive does not start, no fault displayed:

Check that the run command input has been jumpered (Jumper is required between terminals LI1 and +15V).

When the drive is switched on, or at a manual fault reset, or after a stop command, the motor can only be supplied with power once the ”forward” commands have been reset. Otherwise, the drive will display “rdy” or “nSt” but will not start.

Drive does not start, display off:

Check that line voltage is present at the drive terminals

Unplug all the connections on the drive U, V, W terminals and check that there is no short circuit between the phase and earth in the motor wiring or in the motor.

Faults which cannot be reset automatically:

The cause of the fault must be removed before resetting by switching power off and on again.

FAULT	PROBABLE CAUSE	REMEDY
CFF Configuration fault	• The current configuration is inconsistent	• Return to factory settings and re-enter parameters
CrF Capacitor charging circuit	• Load relay control fault or charging resistor damaged	• Replace the drive
InF Internal fault	• Internal fault	• Check the environment (electromagnetic compatibility) • Replace drive
OCF Overcurrent	• Ramp to short • Inertia or load too high • Mechanical locking	• Check the settings • Check the size of the motor/drive/load • Check the state of the mechanism
SCF Motor short-circuit	• Insulation fault or short-circuit at the drive output	• Check the cables connecting the drive to the motor, and the motor insulation
SOF Overspeed	• Instability or driving load too high	• Check the motor, gain and stability parameters • Add a breaking resistor and module • Check the size of the motor/drive/load

Faults which can be reset with automatic restart function, after the cause of the fault disappeared:

These faults can also be reset by switching the drive off and on again.

FAULT	PROBABLE CAUSE	REMEDY
ObF Overvoltage during deceleration	• Braking too sudden or driving load	• Increase the deceleration time • Install a braking module and a braking resistor if necessary • Activate the brA function if it is compatible with the application
OHF Drive over temperature	• Drive temperature too high	• Sheck the motor load, the drive ventilation and the environment. Wait for the drive to cool down before restarting
OLF Motor overload	• Trigger by motor current too high	• Check the setting of the motor thermal protection, check the motor load. Wait for the motor to cool down before restarting
OSF Overvoltage	• Line voltage too high • Disturbed line supply	• Check the line voltage. The overvoltage threshold is 415VDC on the DC bus
PHF Line phase failure	• Dive incorrectly supplied of blown circuit protection • Failure of one phase	• Check the power connections and the circuit protection • Reset

Faults which can be reset as soon as its cause disappears:

FAULT	PROBABLE CAUSE	REMEDY
USF Undervoltage	• Line supply too low • Transient voltage dip • Damaged load resistor	• Check the voltage and the voltage parameter. The undervoltage threshold is 230vDC on the DC bus • Replace the drive

6 Appendix

See Parts List Drawing Insert Page.